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Practitioner's Docket No. 99-156 *PATENT*

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Box Patent Application
Assistant Commissioner for Patents
Washington, D.C. 20231

NEW APPLICATION TRANSMITTAL

Transmitted herewith for filing is the patent application of

Inventor(s): Paul David Mooney, Jr.

For (title): CATHETER INCLUDING TEXTURED INTERFACE

CERTIFICATION UNDER 37 C.F.R. sections 1.8(a) and 1.10*
*(When using Express Mail, the Express Mail label number is **mandatory**;*
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I hereby certify that, on the date shown below, this correspondence is being:

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37 C.F.R. section 1.10*

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TRANSMISSION

☐ transmitted by facsimile to the Patent and Trademark Office.

Date: 1/4/2000

Nancy J Moore
Signature

Nancy J. Moore
(*type or print name of person certifying*)

***WARNING:** *Each paper or fee filed by "Express Mail" **must** have the number of the "Express Mail" mailing label placed thereon prior to mailing. 37 C.F.R. section 1.10(b).*
*"Since the filing of correspondence under [section] 1.10 without the Express Mail mailing label thereon is an oversight that can be avoided by the exercise of reasonable care, requests for waiver of this requirement will **not** be granted on petition " Notice of Oct. 24, 1996, 60 Fed. Reg. 56,439, at 56,442.*

1. **Type of Application**

This transmittal is for an original (nonprovisional) application.

2. **Papers Enclosed**

A. Required for filing date under 37 C.F.R. 1.53(b) (Regular) or 37 C.F.R. 1.153 (Design) Application

11 Page(s) of Specification
3 Page(s) of Claims
8 Sheet(s) of Drawing(s)--Informal

B. Other Papers Enclosed

2 Page(s) of declaration and power of attorney
1 Page(s) of abstract

3. **Declaration or Oath**

Enclosed

Executed by:
* inventor.

4. **Inventorship Statement**

The inventorship for all the claims in this application is the same.

5. **Language**

English

6. **Fee Calculation (37 C.F.R. section 1.16)**

Regular Application

CLAIMS AS FILED					
Claims	Number Filed	Basic Fee Allowance	Number Extra	Rate	Basic Fee 37 CFR 1.16(a) $690.00
Total Claims (37 CFR 1.16(c))	15	- 20 =	0 x	$18.00	$0.00
Independent Claims (37 CFR 1.16(b))	3	- 3 =	0 x	$78.00	$0.00
Multiple Dependent Claim(s), if any (37 CFR 1.16(d))			+	$260.00	$0.00

Filing Fee Calculation $690.00

7. **Small Entity Statement(s)**

Statement that this is a filing by a small entity under 37 C.F.R. sections 1.9 and 1.27 is attached.

Filing Fee Calculation (50% of above) $345.00

8. **Fee Payment Being Made at This Time**

Enclosed

Filing Fee $345.00

Total Fees Enclosed $345.00

9. Method of Payment of Fees

Check in the amount of $345.00 is attached.

10. Authorization to Charge Additional Fees

The Commissioner is hereby authorized to charge the following additional fees by this paper and during the entire pendency of this application to Account No. 06-0540.

37 C.F.R. section 1.16(a), (f) or (g) (filing fees)
37 C.F.R. section 1.16(b), (c) or (d) (presentation of extra claims)
37 C.F.R. section 1.16(e) (surcharge for filing the basic filing fee and/or declaration on a date later than the filing date of the application)
37 C.F.R. section 1.17(a)(1)-(5) (extension fees pursuant to SECTION 1.136(a))
37 C.F.R. section 1.17 (application processing fees)

11. Instructions as to Overpayment

Credit Account No. 06-0540.

ADDED PAGES FOR NEW APPLICATION TRANSMITTAL WHERE BENEFIT OF PRIOR U.S. APPLICATION CLAIMED

12. Relate Back

Amend the specification by inserting, before the first line, the following sentence:

A. 35 U.S.C. SECTION 119(e)

"This application claims the benefit of U.S. Provisional Application No.:

APPLICATION NO.	**FILING DATE**
06/156,300	09/24/1999

13. Further Inventorship Statement Where Benefit of Prior Application(s) Claimed

a. This application discloses and claims only subject matter disclosed in the prior application whose particulars are set out above and the inventor in this application is the same.

Date: 1/4/2000

Scott R. Zingerman
Signature of Practitioner

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Practitioner's Docket No. 99-156

PATENT

Express Mail No. EL446788188US

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Paul David Mooney, Jr.

Application No.:
Filed on:
Title: CATHETER INCLUDING TEXTURED INTERFACE

STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) and 1.27(b)--SMALL BUSINESS CONCERN

I hereby state that I am an official of the small business concern empowered to act on behalf of the concern identified below:

Medical Inventions, L.L.C.
1000 S. Denver, Apt. 2110
Tulsa, OK 74119

I hereby state that the above identified small business concern qualifies as a small business concern, as defined in 13 CFR 121.12, and reproduced in 37 CFR 1.9(d), for purposes of paying reduced fees to the United States Patent and Trademark Office under Sections 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third-party or parties controls or has the power to control both.

I hereby state that rights under contract or law have been conveyed to, and remain with, the small business concern identified above, with regard to the invention described in the specification filed herewith, with title as listed above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights in the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who would not qualify as an independent inventor under 37 CFR 1.9(c), if that person made the invention, or by any concern which would not qualify as a small business concern under 37 CFR 1.9(d) or a nonprofit organization under 37 CFR 1.9(e).

No such person, concern, or organization exists.

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of

the issue fee or any maintenance fee due after the date on which status as a small business entity is no longer appropriate. (37 CFR 1.28(b))

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed..

MEDICAL INVENTIONS, L.L.C.

SIGNATURE _____ Date 1-4-00

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Express Mail No. EL446788188US

UNITED STATES PATENT APPLICATION

FOR

CATHETER INCLUDING TEXTURED INTERFACE

by

Paul David Mooney, Jr.

CATHETER INCLUDING TEXTURED INTERFACE

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to the use of catheters for the introduction of fluids directly into the blood stream and claims benefit of prior filed copending Provisional Application No. 60/156,300, filed September 24, 1999.

Background of the Invention

Medical catheters are commonly used for the introduction of fluids into the bloodstream during medical procedures. Such catheters are available commercially in numerous embodiments designed specifically for such various medical procedures. These catheters are commonly inserted into the blood vessel of the patient through the use of an introducer or a needle and then held in place either by tape or by suturing the catheter to the blood vessel or surrounding tissue.

One problem commonly encountered in such procedures particularly where the catheter is inserted directly into the blood vessel and particularly during pediatric surgery is that the portion of the catheter which interfaces with the blood vessel is smooth, most generally comprised of plastic such that when an attempt is made to secure the catheter within the vessel, most commonly by tying a suture around the interfacing portion of the catheter, the pressure created by tightening of the suture causes the suture to eject or squirt from the blood vessel before it can be secured thereon. As a result, the possibility of contamination of the sterile catheter exists, not to mention the loss of valuable and expensive surgical time. A need therefore exists for a catheter which includes a textured interface so as to provide a frictional component to retain the catheter within the blood vessel while it is secured therein.

In addition to the use of catheters, intravenous stents (I.V.'s) are almost universally inserted into the dorsal vein of the hand when a person is admitted to a hospital or during the administration of a medical procedure. These intravenous stents, as well as many types of catheters, are designed to be maintained in the patient's body for a period of time which

could exceed several days, weeks, or longer. In such situations the patient, if able, will be required to perform routine daily activities with the I.V. stent or catheter inserted in his or her body. Such routine activity and movement causes the portion of the I.V. or catheter which interfaces with the skin or blood vessel to move or migrate therein. A known concern is that such movement of the interface within the skin tissue or blood vessel may allow the introduction of infection causing organisms to enter the body or blood vessel. Such organisms may potentially result in a serious bodily infection. A need therefor exists for an I.V. stent and catheter which includes a textured interface to allow secure placement of the I.V. or catheter within the patient's skin tissue or blood vessel.

Central venous catheters have unique requirements to be maintained in a fixed position in the body to avoid migration and infection. Migration may produce serious vascular perforations, complications, and catheter infection produces sepsis both of which may be fatal complications.

Both complications will be reduced by improved fixation of the catheter and natural tissue attachment to the textured surfaces. Pediatric patients have especially difficult fixation problems due to larger catheter size to body size ratios and inability of the patient to cooperate in catheter long term care.

In addition, as the distance the catheter (or I.V.) body interface is positioned or secured from the situs of penetration into the patient's skin tissue/blood vessel increases, an increase in the resultant migration thereof is realized. As stated, the result of increased migration of the catheter (or I.V.) body interface is an increased risk of infection. A need, therefore, exists for a catheter or I.V. which is textured to restrain the catheter body interface within or adjacent the situs of penetration.

SUMMARY OF THE INVENTION

The present invention is a catheter including a body for insertion into a blood vessel of a medical patient. The body includes an interface thereon which is the portion of the body that is inserted into the blood vessel and is in contact therewith. A cannula may extend from the interface. The interface includes texture on its exterior surface such that when the body is inserted into the blood vessel, it can be secured therein without being ejected from the blood vessel during the process of securing the body within the blood vessel. As such, the textured interface provides sufficient frictional contact with the patient's skin or blood vessel so as to grip or retain the body therein while it is being tied or sutured in place. The texture thereby provides an increased surface area which is obtained by scoring or molding indentations within and along the length of the interface to provide such texture. Examples of suitable texture include diagonal cross-hatching or knurling, threading, concentric indentations cut along its length of either a fine depth and spacing or a coarse depth and spacing thereby providing ridges or concentric "donut" shapes along the length of the interface, or a plurality of cells or ridges positioned along the exterior surface of the interface. It is desirable that such texture provides increased surface area so as to achieve frictional contact between the interface and the blood vessel without causing damage to the blood vessel or surrounding tissue.

The texture of the present invention may also be used in alternate embodiment catheters which include a body having an interface thereon, a lumen for the introduction of liquids through the catheter, and wire guide obturator. In such an embodiment, the catheter is typically introduced through the skin and into the blood vessel such that the interface of the body is in direct contact with the skin tissue of the patient while the cannula pierces therethrough into and generally along the blood vessel. Catheters of this type are generally installed for periods of several days, weeks or longer for the long term introduction of fluids directly into the blood vessel. In such cases, the textured interface of the catheter body restricts movement of the catheter body within the skin tissue such that the tendency of the

piercing wound to heal allows the skin cells (microplast) to grow in the texture thereby securing the catheter body from migration. In this way, the textured interface reduces and may eliminate the introduction of bacteria or fungi which have the potential of causing infection within the patient's body. A portion of the cannula may also be textured to further assist in securing the catheter from migration. It has been found that the catheter body should be fixed at the point of entry into the patient's body, as according to the present invention.

In addition, intravenous stents almost universally inserted into a patient's body during medical procedures may include a textured interface portion for the purpose of securing the stent within the patient's vein thereby also restricting the possibility of the introduction of infection causing organisms into the body or blood stream of the patient.

It is therefore an object of the present invention to include a catheter having a body including a portion which interfaces with the skin tissue or blood vessel of a patient during medical treatment wherein the interface is textured.

It is another object of the present invention to texture the interface of a catheter, and specifically an arterial or venous catheter to retain the catheter therein while it is secured in the patient's blood vessel.

It is still another object of the invention to provide an intravenous stent with a textured interface thereon.

A yet further object of the present invention is to provide a catheter or I.V. with a textured body interface thereby restraining this body interface within the situs of penetration into the patient's skin tissue/blood vessel.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 depicts a central venous catheter which includes a textured interface of the present invention.

FIGURE 2 is the central venous catheter of FIG. 1 wherein the knurled textured interface is depicted piercing and in contact with the skin of the patient.

FIGURE 3 is the central venous catheter of FIG. 1 configured with an alternate textured configuration including concentric rings cut in the length of the interface.

FIGURE 4 is the central venous catheter of FIG. 1 configured with a second alternate textured configuration concentric rings having deeper channels than the first alternate textured configuration of FIG. 3 .

FIGURE 5 is the central venous catheter of FIG. 1 configured with a third alternate textured configuration including integral raised cells or bumps on the interface.

FIGURE 6 is the central venous catheter of FIG. 1 configured with a fourth alternate texture configuration including cells or bumps which are smaller than the cells or bumps of the third textured configuration of FIG. 5.

FIGURE 7 depicts a plan view of a peripherally inserted central venous catheter (PICC) including textured interface.

FIGURE 8 is a plan view of an intravenous stent which includes the textured interface of the present invention.

FIGURE 9 is an exploded view of the intravenous catheter of FIG. 8 wherein the stent portion includes the textured interface of the present invention.

FIGURE 10 is a plan view of a catheter inducer which includes the textured interface of the present invention.

FIGURE 11 is a view of a alternate embodiment catheter inducer which includes the textured interface of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

FIGURE 1 depicts a central venous catheter, and in particular, a peripherally inserted central venous catheter body **10** including lumen **12**, wings **14** and **16**, interface **18**, and wire guide obturator **20** extending therefrom. Pursuant to the present invention, interface **18** includes a texture thereon such that when catheter **10** is inserted into a patient, the textured portion **22** of interface **18** is in contact with the patient's skin in order to keep catheter body **10** stationery therein. Referring more particularly to FIG. 2, where catheter body **10** is shown inserted through the skin **24** of a patient and into a vein **26**. As such, cannula **20** extends from lumen **12** of catheter body **10** and into skin **24** and into vein **26**. Interface **18** is the portion of catheter body **10** between cannula **20** and lumen **12**. Interface **18** extends into the skin **24** of the patient. Texture **22** on interface **18** and or a portion of the first end of cannula **20** creates frictional contact between interface **18** (and cannula **20**) of catheter body **10** and skin **24**. Such frictional contact helps prevent catheter body **10** from moving or migrating within skin **24** or becoming dislodged therefrom.

Catheter body **10** is secured in place within the patient's body at the point of entry of interface **18** and cannula **20**.

An additional important function of texture **22** is that the skin **24** (microplast) surrounding interface **18** will grow in an attempt to close or heal the hole (puncture) through which interface **18** and cannula **20** are inserted such that the cells will grow into engagement with the greater surface area of the interface caused by the texture in an attempt to close the puncture wound caused when the catheter was inserted. This interface between the cells of skin **24** and texture **22** of interface **18** will help deter interface **18** from moving in and out of skin **24** when the patient moves through activity. In this way, the possibility of infection causing germs from entering the puncture wound through skin **24** and the blood stream within vein **26** from the portion of interface **18** extending outside of skin **24** is greatly reduced. Such reduction in the possibility of the introduction of bacteria or fungus into the body is significant in the reduction of serious infection possibilities inherent in the use of the

venous catheter. This infection risk is generally heightened by the typically weakened state of the patient's immune system as a result of the medical condition necessitating the use of the catheter.

The style of texture **22** in the preferred embodiment of FIG. 1 is a cross-hatching or knurling wherein lines are cut into the surface of interface **18** in a diagonal fashion along the annular, semi-cylindrical circumference of interface **18**. The diagonal lines are cut such that they cross thereby forming discreet square or most commonly diagonal patterns **28**. In that the diagonal lines are cut into the surface of interface **18**, their crossing thereby defines discreet pattern **28** appearing raised above the circumference of interface **18**. Each such discreet pattern **28** is separated from the next by the cross-hatched diagonal indentions. The particular geometric shape of individual pattern **28** is determined by the angle of the diagonal line cut in the surface of interface **18**. For the purpose of exemplification, 500 microns is a suitable depth of texture **22**, however, other depths are contemplated depending on the application.

Although texture **22** has been defined herein as being formed by cutting diagonal lines in the surface of interface **18**, it is understood that other methods of manufacture are contemplated such as by injection molding the texture into the surface of interface **18** or such other manufacturing processes known in the art.

In addition, it is understood that individual configuration **28** could be defined by other types of indentions in interface **18** such as curved lines or perpendicular lines. Although the particular geometric design of FIG. 1 is preferred.

Referring next to FIG. 3, a first alternate embodiment texture is disclosed. Interface **32** of catheter **30** includes first alternate embodiment texture **34**. First alternate texture **34** is defined by a series of concentric rings cut in the exterior circumference of interface **32**. As with the preferred embodiment, the annular rings, as exemplified by ring **36** may be either cut in the surface of interface **32** or molded therein during the manufacture of catheter **30**.

Annular rings **36** and **38** of texture **34** bound and define a discreet raised annular slice

of interface **32**. Each independent slice **37** may have equal diameters or may increase or reduce in diameter along the length of interface **32** as desired.

Catheter **30** may be substituted for catheter **10** in FIG. 2 such that wire guide obturator **39** pierces skin **24** and extends into vein **26** such that interface **32** engages skin **24** at the surface thereof and provides frictional contact therein. Texture **34** further provides the protection against infection as described above.

FIG. 4 depicts a central venous catheter **40** including a second alternate embodiment texture **44** along interface **42**. In this second alternate embodiment texture **42**, the concentric rings, as exemplified by rings **46** and **48**, are deeper in interface **42** defining a larger, more donut-shaped individual configuration as exemplified by configuration **47**. Each individual "donut-shaped" texture configuration may be of equal size or increase or decrease in diameter along the length of interface **42** as desired for the required application or efficiency. Additionally, as stated above, texture **44** may be created in interface **42** at the time of its manufacture, typically by molding, or thereafter by a machine process.

Second alternate embodiment catheter **40** may be substituted for catheter **10** of FIG. 2 such that wire guide obturator **49** pierces skin **24** and enters vein **26** such that texture **44** pierces skin **24** in contact thereof.

Referring next to FIG. 5, wherein a central venous catheter **50** includes a third alternate embodiment texture **54** is disclose on interface **52**. Third alternate texture embodiment texture **54** includes a series of cells or ridges **55-57** which extend above the cylindrical circumference of interface **52**. Cells, or bumps, **55-57** may be formed in any known manner, however, it is believed that forming thereof during forming of interface **52** is the most efficient method. It is preferred that cells **55-57** be formed so as to provide a smooth texture and thereby rounded so as to minimize damage to the patient's tissue during use thereof. However, more pointed cells are contemplated in the invent that superior frictional capabilities of texture **54** are necessary.

Catheter **50** may be substituted for catheter **10** in FIG. 2 such that interface **52**

extends into skin **24** and is in frictional contact therewith.

Venous catheter **60** of FIG. 6 includes a plurality of smaller bumps, exemplified by bump **66** on interface **62**. As can be seen, bump **66** is smaller than bump **55** of FIG. 5. As such, texture **64** of catheter **60** of FIG. 6 may be desirable for applications where less aggressive frictional contact between interface **62** and the surrounding patient's tissue is appropriate. The number of bumps such as bump **66** may be varied also as necessary. Bumps, such as bump **66**, may be rounded or may have point thereon as desired for suitable applications.

Catheter **60** including texture **64** may be manufactured according to any suitable process. Catheter **60** may also be substituted for catheter **10** in FIG. 2 such that texture **64** of interface **62** is in contact with skin **24** upon insertion of catheter **60** through skin **24** into vein **26**.

FIG. 7 depicts a peripherally inserted central venous catheter (PICC) **70** wherein interface **72** includes texture **74** thereon. As can be seen, the portion of wire guide obturator **76** adjoining interface **72** may also be textured to allow greater frictional interaction with the surrounding tissue. PICC **70** is configured in a dual lumen configuration including a larger lumen **78** and a small lumen **79**.

FIG. 8 depicts an assembled intravenous stent assembly **80**. Intravenous stent assembly **80** includes stent portion **82** and introducer/needle portion **84**. Intravenous stent assemblies such as assembly **80** are commonly used to provide intravenous access to a medical patient.

Taking FIG. 8 in combination with FIG. 9, intravenous stent assembly **80** includes stent portion **82**, introducer/needle portion **84** and plug **86**. In use, the assembled intravenous stent **80** (such as FIG. 8) is inserted into the patient's vein using needle **88**. Intravenous stent assembly such as **80** are commonly inserted into a vein in the top of the patient's hand, wherein needle **88** and surrounding cannula **90** are inserted into the vein. Once inserted, intravenous fluids may be added by injection through plug **86** or by the removal of plug **86**

and introduction through the hollow length of introducer **84**.

Most commonly, however, once inserted, introducer/needle portion **84** is removed thereby leaving stent **82** within the hand of the patient such that cannula **90** and interface **92** extend into the vein. Once introduced, stent **82** is typically taped or sutured in place through holes **94** and wings **96**. Introducer **92** of stent **82** includes texture **93** thereon. Texture **93** helps prevent stent **82** from being ejected by the vein. A portion of cannula **90** may also be textured, preferably adjacent introducer **92**. Texture **93** also reduces movement of introducer **92** and thereby stent **82** within the vein. Thus, a secure intravenous stent provided.

FIG. 10 depicts a catheter introducer assembly **100**. An introducer is also known in the art as a sheath or introducer sheath designed to allow controlled access to the body, minimize trauma to vein or artery and prevent excessive blood loss during a procedure. Introducers are available in many configurations to provide a sheath for introducing a catheter into the body.

Introducer **100** generally consists of two components, a sheath component **102** and a dilator component **104**. Dilator **104** is longer than sheath **102** and is comprised of a smooth, stiff tube with a taper at its distal end **105**. Dilator **104** fits within sheath **102**. Taper **105** when inserted into the patient acts to dilate the tissue in the skin and vein to allow the sheath to pass thereafter. Once the introducer is inserted into a vein through the skin and positioned therein, introducer **100** allows a catheter to be inserted into the vein.

Sheath **102** of introducer **100** includes texture **106** and **107** thereon in order to provide frictional engagement with the skin and vein when sheath **102** is inserted. Texture **106** also restricts sheath **102** from movement within the vein in order to reduce the possibility of introduction of infection causing bacteria and fungi. A hub **108** includes a valve therein to prevent blood from leaking from the vein. A catheter is generally inserted through hub **108**, sheath **102** and into the blood vessel to allow for the introduction of fluids therethrough. A side arm **110** terminating with a stop cock **112** is used to measure blood pressure and withdraw samples of blood for testing or otherwise.

FIG. 11 depicts introducer **120** for the insertion of guide wire **126** into a blood vessel to be followed by a catheter (such as PICC **70** of FIG. 7). Introducer body **120** is typically inserted directly into a severed vein such as in a angiogram procedure. Interface **122** of introducer body **120** includes texture **124** to provide frictional resistance while introducer body **120** is secured in the vein.

While the invention has been described with a certain degree of particularity, it is manifest that many changes may be made in the details of construction without departing from the spirit and scope of this disclosure. It is understood that the invention is not limited to the embodiment set forth herein for purposes of exemplification, but is to be limited only by the scope of the attached claim or claims, including the full range of equivalency to which each element thereof is entitled.

CLAIMS

What is claimed is:

1. A catheter for insertion into a blood vessel of a medical patient, comprising:

a body including an interface;

said interface being the portion of said body which is inserted into the blood vessel;

said interface having an exterior surface including texture thereon.

2. The catheter of claim 1, wherein said texture is knurling.

3. The catheter of claim 1 wherein said texture includes a plurality of grooves cut into the exterior of said interface.

4. The catheter of claim 1 wherein said interface includes a plurality of concentric rings integrally formed along its length.

5. The catheter of claim 1 wherein plurality of bumps are positioned on the exterior surface of said interface.

6. The catheter of claim 5 wherein the bumps are rounded.

7. The catheter of claim 5 wherein the bumps are pointed.

8. The catheter of claim 1 further including a wire guide obturator having a first end and a terminal end;

said first end being secured to said interface;

said first end including texture thereon.

9. An introducer for use with a catheter,

comprising a sheath for receiving the catheter;

said sheath including texture thereon.

10. An intravenous stent, comprising:

an introducer portion having a needle extending therefrom;

a stent portion;

said stent portion capably of receiving said needle therethrough;

said stent portion including an introducer and a cannula through which said needle extends;

said introducer including texture thereon.

11. The intravenous stent of claim 10 wherein a portion of said cannula includes texture thereon.

12. The intravenous stent of claim 11 wherein a portion of said cannula adjacent said introducer is textured.

13. The intravenous stent of claim 10 wherein said texture is knurling.

14. The intravenous stent of claim 10 wherein said texture includes a plurality of grooves cut into the exterior of said interface.

15. The intravenous stent of claim 10 wherein said texture includes a plurality of bumps positioned on its exterior surface.

ABSTRACT

A catheter including a body for insertion into a blood vessel of a medical patient. The body including an interface thereon which is the portion of the body that is inserted into and in contact with the skin or blood vessel of the patient. The interface includes texture on its exterior surface such that when the catheter body is inserted into the blood vessel, the texture secures the catheter body from migration at the point of entry of the catheter body into the patient. The texture is obtained by scoring or molding an irregular surface along the length of the interface. In the event that the catheter is configured for use with an introducer or cannula, portions of the introducer or cannula may also be textured in accordance with the invention.

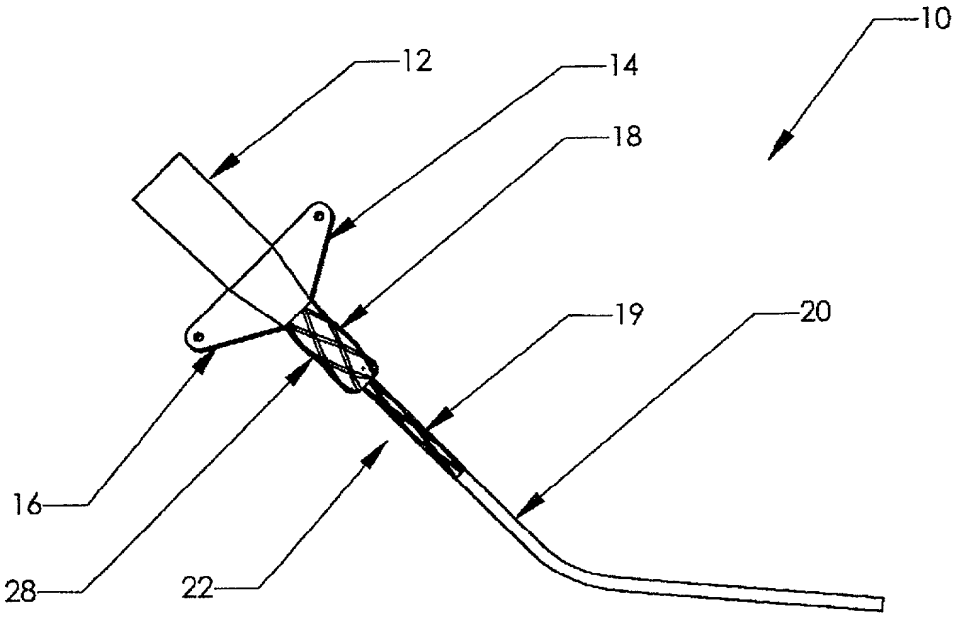

Fig. 1

Fig. 2

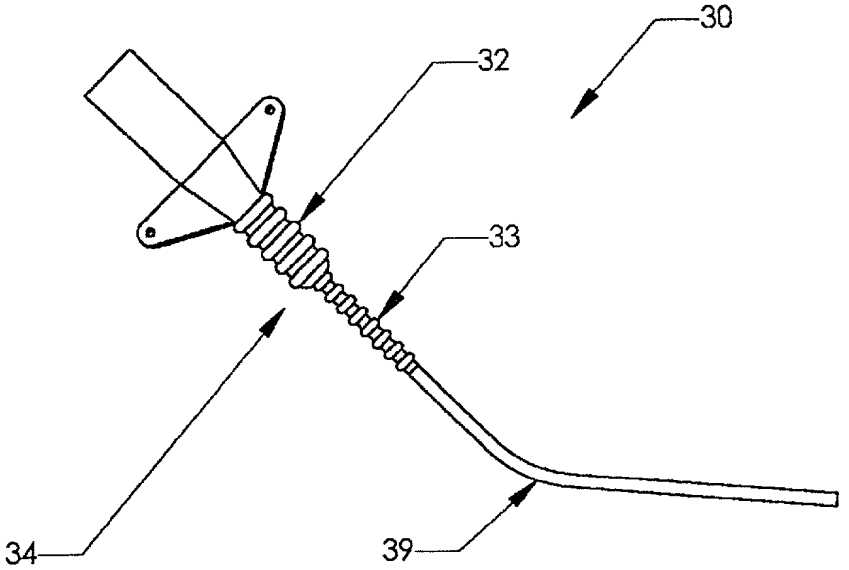

Fig. 3

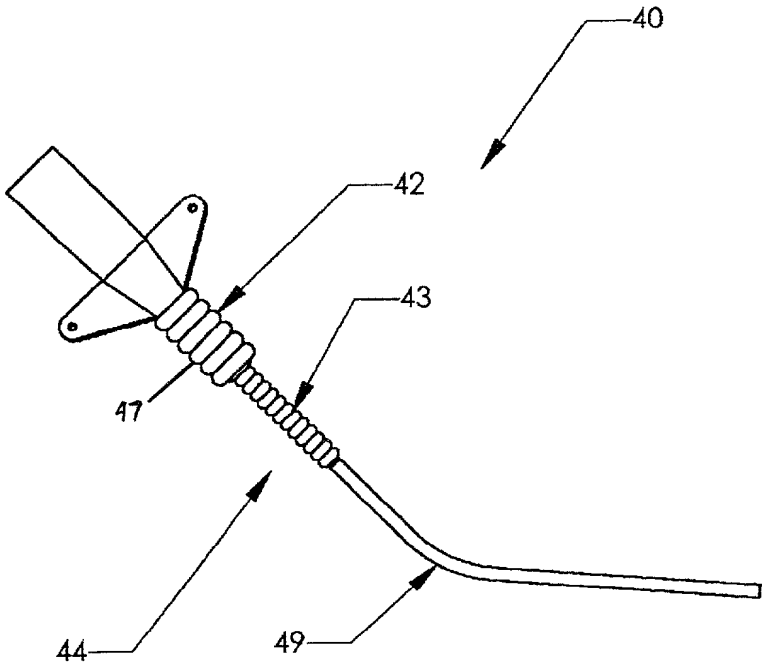

Fig. 4

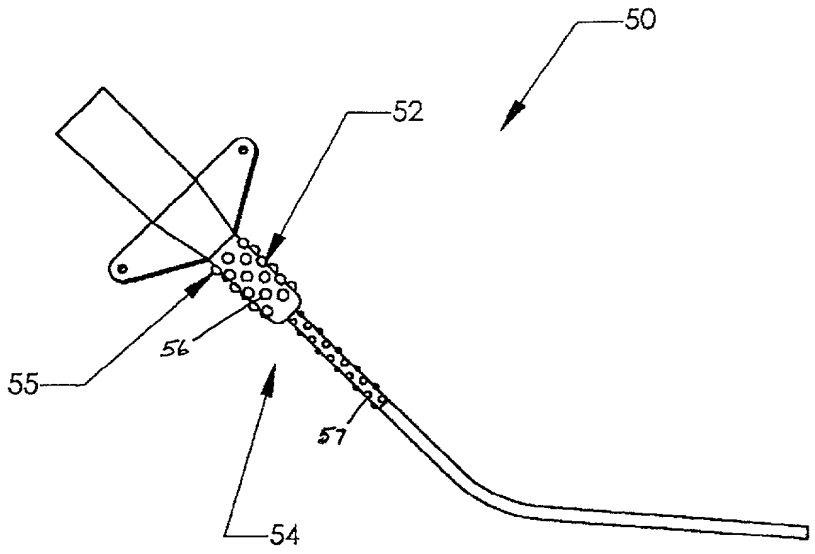

Fig. 5

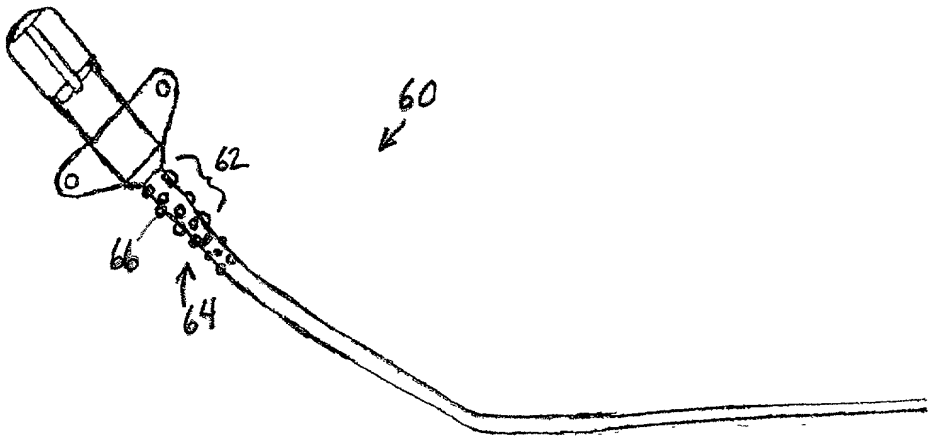

Fig. 6

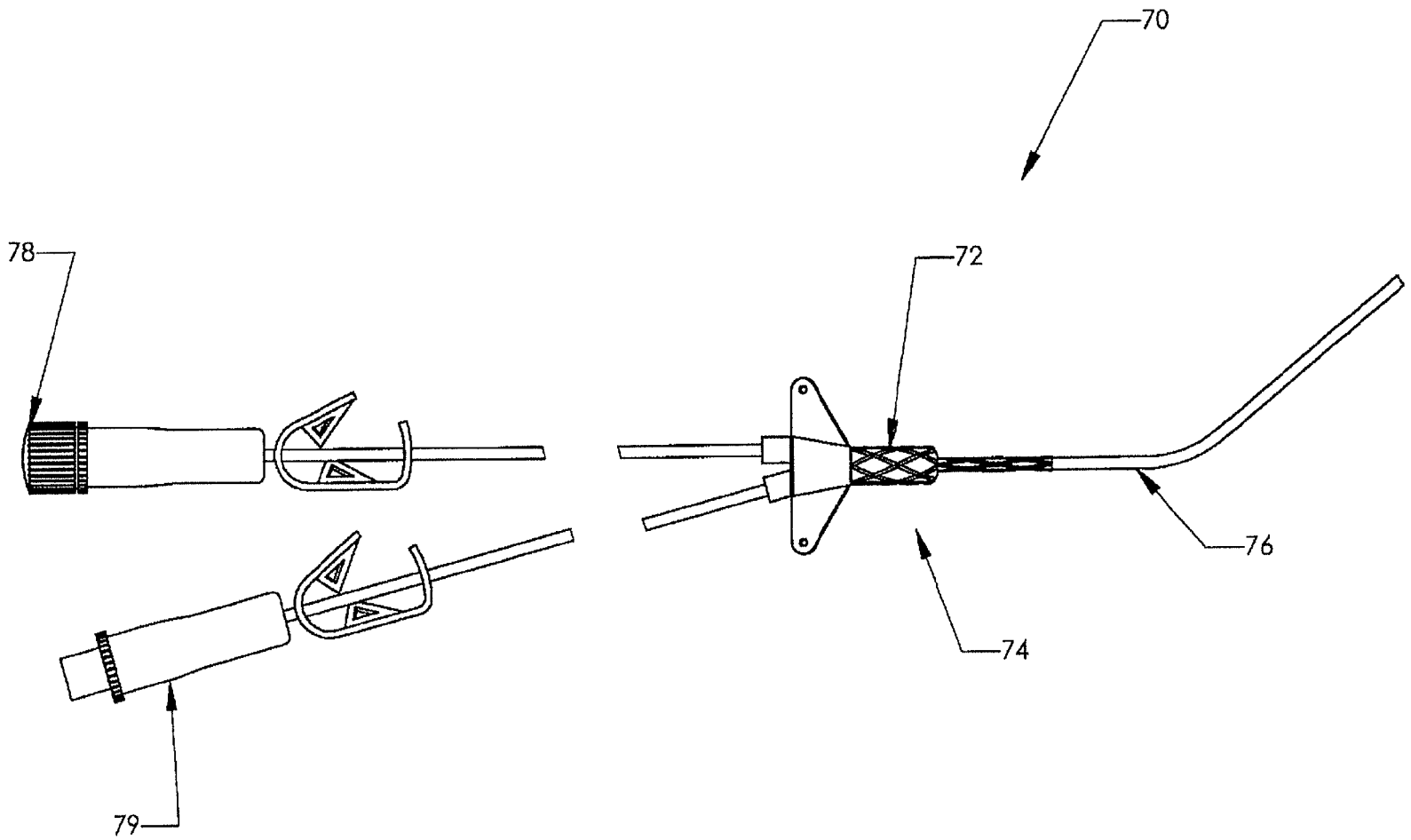

Fig. 7

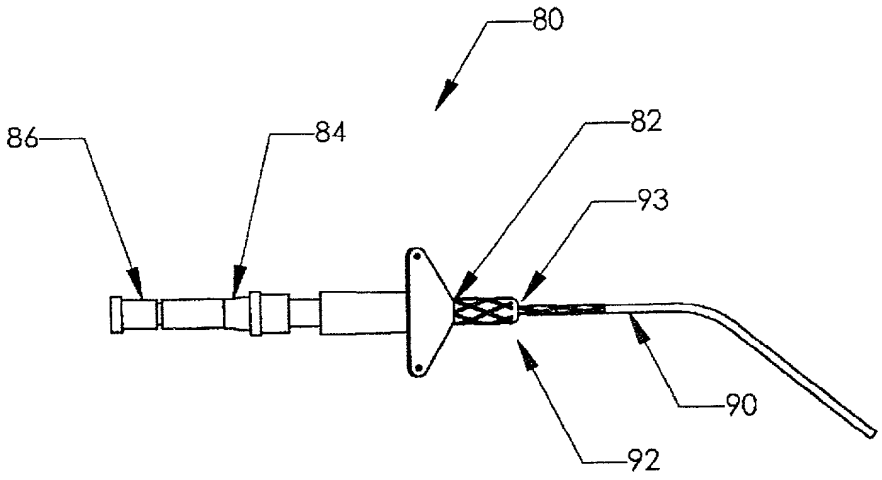

Fig. 8

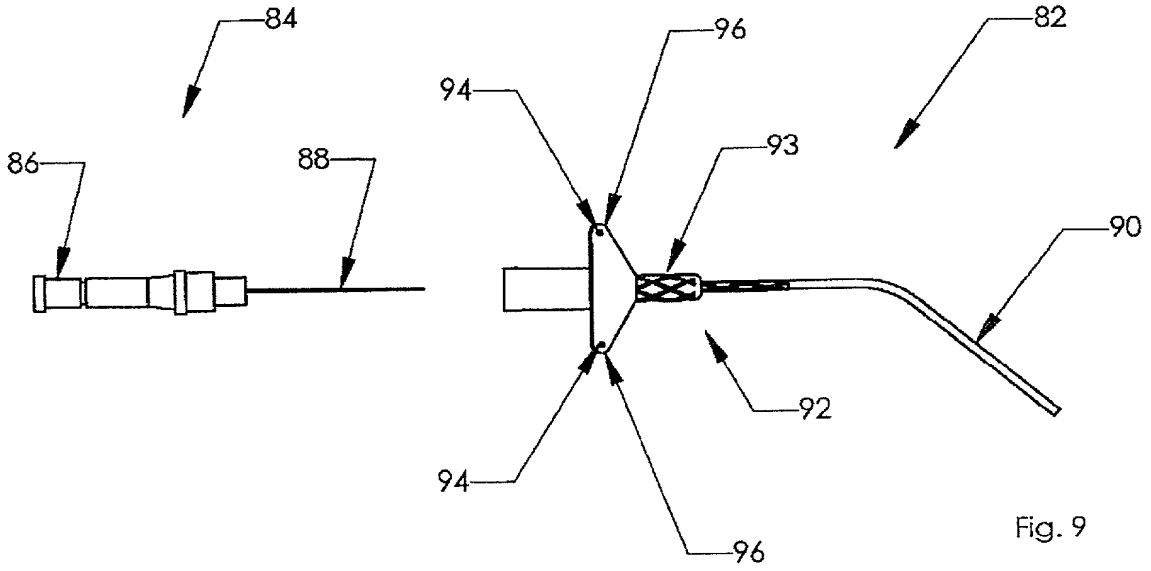

Fig. 9

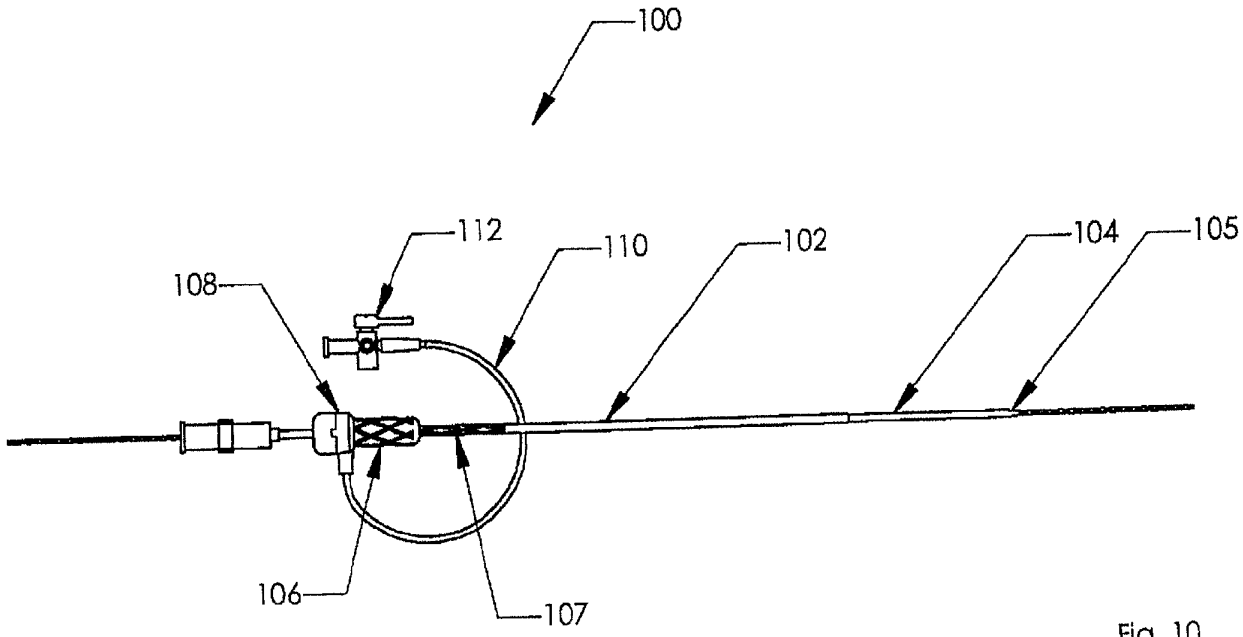

Fig. 10

FIG. 1A

Practitioner's Docket No. 99-156

PATENT
Express Mail No. EL446788188US

COMBINED DECLARATION AND POWER OF ATTORNEY

(ORIGINAL, DESIGN, NATIONAL STAGE OF PCT, SUPPLEMENTAL, DIVISIONAL, CONTINUATION, OR C-I-P)

As a below named inventor, I hereby declare that:

TYPE OF DECLARATION

This declaration is for an original application.

INVENTORSHIP IDENTIFICATION

My residence, post office address and citizenship are as stated below, next to my name. I believe that I am the original, first and sole inventor *(if only one name is listed below)* or an original, first and joint inventor *(if plural names are listed below)* of the subject matter that is claimed, and for which a patent is sought on the invention entitled:

TITLE OF INVENTION

SURGICAL CATHETER INCLUDING TEXTURED EDGE

SPECIFICATION IDENTIFICATION

The specification is attached hereto.

ACKNOWLEDGMENT OF REVIEW OF PAPERS AND DUTY OF CANDOR

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information, which is material to patentability as defined in 37, Code of Federal Regulations, § 1.56, and which is material to the examination of this application, namely, information where there is a substantial likelihood that a reasonable Examiner would consider it important in deciding whether to allow the application to issue as a patent, and in compliance with this duty, there is attached an information disclosure statement, in accordance with 37 CFR 1.98.

CLAIM FOR BENEFIT OF PRIOR U.S. PROVISIONAL APPLICATION(S)
(35 U.S.C. § 119(e))

I hereby claim the benefit under Title 35, United States Code, § 119(e) of any United States provisional application(s) listed below:

PROVISIONAL APPLICATION NUMBER	FILING DATE
60/156,300	09/24/99

POWER OF ATTORNEY

I hereby appoint the practitioner(s) associated with the Customer Number provided below to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith.

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Dennis D. Brown	Registration Number 33,559
R. Alan Weeks	Registration Number 36,050
Terry L. Watt	Registration Number 42,214
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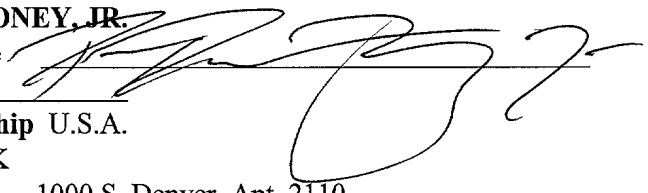
DECLARATION

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

SIGNATURE(S)

PAUL DAVID MOONEY, JR.
Inventor's signature 
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